REMARKS

In the office action mailed on September 8, 2004, objections to the drawings were made, claims 7 - 12 and 14 - 15 were rejected under 35 U.S.C. §112, ¶1, claims 1, 3 - 8 and 10 - 16 were rejected under 35 U.S.C. §102(e) over U.S. Published Patent Application Publication No. 2003/0122091 (to Almogy), and claims 2 and 9 were rejected under 35 U.S.C. §103(a) over Almogy.

With regard to the drawing objections and the rejections under §112, ¶1, claims 7 and 8 each include a recitation of an array of microlenses. The office action states that the drawings are objected to as not showing the array of microlenses and that claims 7 and 8 are rejected under §112, ¶1 because the array of microlenses are not disclosed in the application.

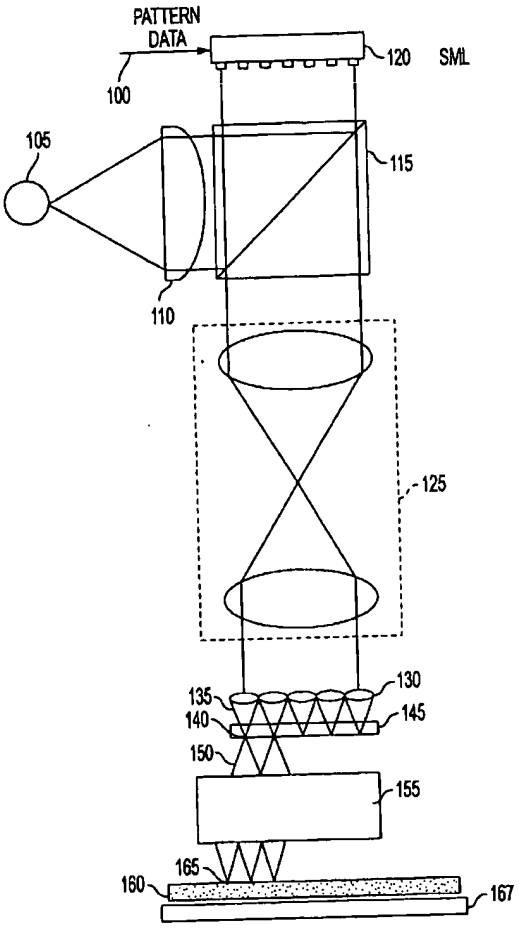
The application clearly states on page 5 that:

> In certain embodiments, the array of sources may have an array of diffractive or refractive lenses to collimate the radiation, and in certain embodiments, the each of the lenses may be coupled directly to and thereby included with each of the sources 16 in Figure 1.

Application, page 5, lines 14 - 17. The application, therefore, clearly states that in certain embodiments, each of the sources 16 in the array of sources includes a microlens. Accordingly, the array 16 includes the microlenses as disclosed therein. It is respectfully submitted, therefore, that the objection to the drawing and the rejection of claims 1 and 8 under §112, ¶1 should be withdrawn. Claims 9 - 12 each depend from claim 8 and are also considered to satisfy the requirements of §112, ¶1 for the above reasons. Claims 14 and 15 are canceled herein.

With regard to the rejections under §102(e) and §103, the Almogy reference discloses, with reference to Figure 1 (a copy of which is reproduced below) a maskless spot-grid array printer that includes a single light source 105 (e.g., a laser), a beam splitter 115, a spatial light modulator 120, relay optics, a microlens array 130, a photon-electron converter 145, electron optics 155, and a

substrate 160 that is supported by a stage 167. Almogy reference, ¶¶ [0028] - [0032].

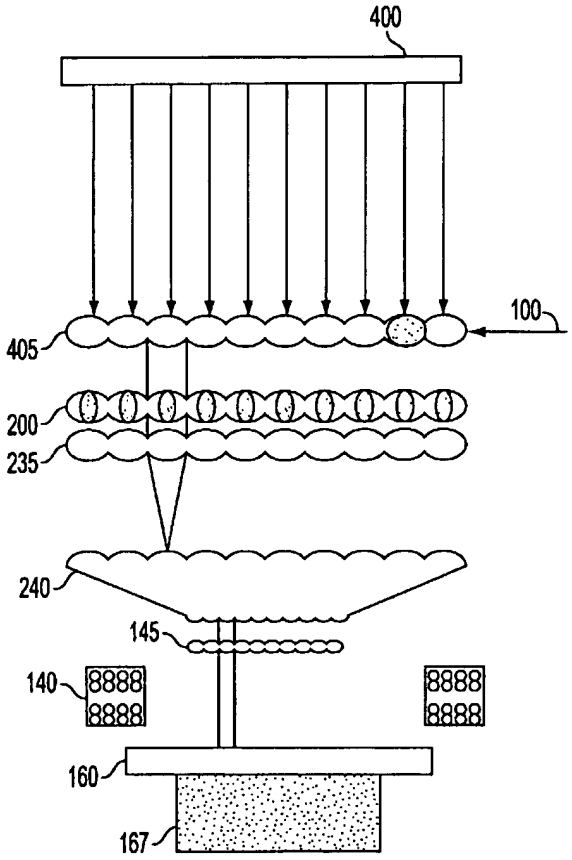


Almogy reference, Figure 1

A first intermediate pattern is disclosed to be formed by the spatial light modulator 120, a second intermediate pattern is disclosed to be formed on the top surface of the photon-electron converter 145, a third intermediate pattern is disclosed to be created by the the photon-electron converter 145, and a fourth intermediate pattern is disclosed to be formed by the electron sources on the substrate 160. Almogy reference, ¶¶ [0028] - [0032].

The Almogy reference also discloses, with reference to Figure 4 (a copy of which is reproduced below), another maskless spot-grid array printer that includes an array of individually

controlled lasers 400 (e.g., VCSELs), a spatial light modulator 220, a beam shaper 230, focusing optics 235, an optical demagnifier 240, a photon-electron converter 145, and a substrate 160 that is supported by a stage 167. Almogy reference, ¶¶ [0039], [0040] and [0045].



Almogy reference, Figure 4

The array of individually controlled lasers 400 is disclosed to be used to create a pattern of beams that are directed toward the photon-electron converter 145. Almogy reference, ¶ [0045]. Although the Almogy reference discloses that it is intended to be used for lithography for imaging semiconductor substrates (Almogy reference, ¶ [0002]) and that it is an object of the alleged invention to improve efficiency and speed (Almogy reference, ¶ [0007]), none of the embodiments disclosed in the Almogy reference disclose, teach or suggest directly writing to a substrate. Each involves the use of providing focal spots to a photon-electron converter 145, which in turn provides a

pattern on a substrate. The substrate must be covered with an electron-sensitive resist so as to expose the resist with the desired pattern. Almogy reference, ¶ [0024].

The applicants' invention, conversely, provides a system for direct imaging onto a substrate without requiring the intermediate use of a photon-electron converter. As claimed in amended claim 1, the system includes an array of focusing elements, each of which focuses a photon beam from an array of photon sources into an array of focal spots on an adjacent substrate in order to create a permanent pattern on the adjacent substrate. The Almogy reference does not disclose, teach or suggest such a system. It is not obvious to remove elements from Almogy's systems when there is no suggestion to do so since an objective of the alleged invention in the Almogy reference is to provide simplicity and speed in such a lithography system.

Similarly, amended claim 8 is directed toward a system that includes an array of focusing elements, an array of microlenses, and an array of photon sources, wherein each photon source is positioned to selectively direct energy through a microlens toward a focusing element, and each focusing element is positioned to direct a focused beam onto a substrate to create a permanent pattern thereon. Again, the Almogy reference does not disclose, teach or suggest such a system.

Amended claim 13 is directed toward a system that includes an array of Fresnel lenses, each of which focuses a photon beam from an array of photon sources into an array of focal spots on an adjacent substrate in order to create a permanent pattern on the adjacent substrate. The Almogy reference does not disclose, teach or suggest such a system.

Amended claim 16 is directed to a system that includes an array of photon sieves, each of which focuses a photon beam from an array of photon sources into an array of focal spots on an adjacent substrate in order to create a permanent pattern on the adjacent substrate. The Almogy reference does not disclose, teach or suggest such a system.

Each of dependent claims 2 - 7 depends directly from claim 1, and each of dependent claims 9 - 12 depends directly from claim 8. Each of claims 1 - 13 and 16, therefore is considered to be in condition for allowance.

Favorable action consistent with the above is respectfully requested.

Respectfully submitted,

William E. Hilton
Registration No. 33,298
Gauthier & Connors
225 Franklin Street, Suite 3300
Boston, Massachusetts 02110
Tel. No. (617) 426-9180, Writer's Ext.:111